

VLA CONTINUUM OBSERVATIONS OF BARRED SPIRAL GALAXIES

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ABSTRACT

In this paper we report observations of NGC 613, NGC 1300, NGC 4314 and NGC 5383 using the VLA at frequencies of 1464.9 and 4885.1 MHz. These objects are a subset of galaxies from which we have searched for radio emission. Our selection criteria were: a) they are barred spiral galaxies preferentially with different Hubble type; b) they have a peculiar or hot-spot nucleus as reported by Sersic (1973, P.A.S.P. 85, 103) or Vorontsov-Vel'yaminov, Zaitseva and Lyutyi (1972, Soviet Astron. 16, No. 1, 71); c) they have been observed at far-infrared wavelengths by IRAS (1985, IRAS Catalogs and Atlases: the Point Source Catalog, Government Printing Office) and d) they are observable from the northern hemisphere. Their radio and far-infrared properties are summarized in Table I while their composite spectra are shown in Figure 1.

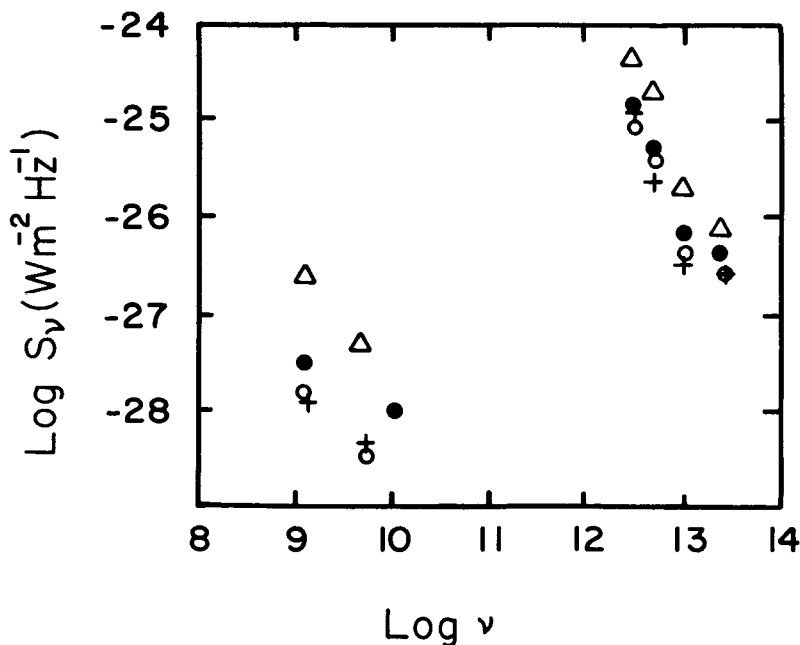


Figure 1. Composite spectra showing radio and far-infrared observations of NGC 613 (Δ), NGC 1300 (+), NGC 4314 (o) and NGC 5383 (●).

TABLE I. Radio and far-infrared properties.

GALAXY	TYPE	FRE- QUENCY (GHz)	S _v TOTAL (mJy)	S _v CENTRAL (mJy)	REF.	DIS- TANCE ^a (Mpc)	FIR FLUX DENSITY (Jy)			T _d (°K)	L _{FIR} ^b (ERG SEC ⁻¹)	FIR ^c M _g (M _⊙)
							12 _{μm}	25 _{μm}	60 _{μm}			
NGC 613	SB _b (rs)	1.4649	260 ± 10	82 ± 2	1, 3	15.3	0.74	2.09	19.30	48.12	3.5 × 10 ⁴³	6.8 × 10 ⁷
		4.8851	45 ± 5	15	1, 3							
NGC1300	SB _b (s)	1.4649	12	5	1, 6	15.6	0.25	0.31	2.39	10.78	0.6 × 10 ⁴³	2.4 × 10 ⁷
		4.8851		1	1							
NGC4314	SB _a (rs) PEC	1.4649	15 ± 3	~11	1, 2	8.8	0.25	0.39	3.71	7.30	0.2 × 10 ⁴³	3.0 × 10 ⁶
		4.8851	5 ± 1	~3	1, 2							
NGC5383	SB _b (s)	1.4649	34 ± 1	~20	1, 4	23.5	0.36	0.65	5.23	12.60	2.1 × 10 ⁴³	3.8 × 10 ⁷
		10.7	8.8 ± 1		5							

REFERENCES: (1) THIS PAPER; (2) GARCIA-BARRETO, J.A. AND PISMIS, P., 1986, IN PREPARATION; (3) HUMMEL, E., VAN DER HULST, J.M. AND DICKEY, J.M., ASTRON. ASTROPH. 134, 207; (4) SANCISI, R. AND ECKERS, R.D., 1978, ASTRON. ASTROPH. 67, L21; (5) GRÄVE, R., KLEIN, U. AND WIELEBINSKI, R., 1981, ASTRON. ASTROPH. 95, 391; (6) HUMMEL, E., PEDLAR, A., VAN DER HULST, J.M. AND DAVIES, R.D., 1985, ASTRON. SUPPL. SERIES 60, 293.

^a ASSUMING: H₀ = 100 KM S⁻¹ Mpc⁻¹.

^b ASSUMING: L_{FIR} = 4_πD²FIR, WHERE FIR = 1.26 × 10⁻¹⁴ * [2.58 f_v(60_{μm}) + f_v(100_{μm})].

^c ASSUMING: M_g^{FIR} = 100 M_g^{FIR}, WHERE M_g^{FIR} = ρL_{FIR}/3σT⁴(Q_e/a),